

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,120,685 B2
APPLICATION NO. : 09/891584
DATED : October 10, 2006
INVENTOR(S) : Ullmann et al.

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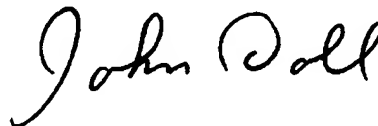
It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Delete the title page and substitute therefore the attached title page.

Figures 1-8 are replaced by the attached 9 Sheets with Replacement Drawings.

This certificate supersedes the Certificates of Correction issued May 5, 2009 and May 26, 2009.

Signed and Sealed this
Sixteenth Day of June, 2009

A handwritten signature in black ink that reads "John Doll". The signature is written in a cursive, flowing style.

JOHN DOLL
Acting Director of the United States Patent and Trademark Office

(12) **United States Patent**
Ullmann et al.

(10) Patent No.: **US 7,120,685 B2**
(45) Date of Patent: **Oct. 10, 2006**

(54) **METHOD AND APPARATUS FOR DYNAMIC CONFIGURABLE LOGGING OF ACTIVITIES IN A DISTRIBUTED COMPUTING SYSTEM**

(75) Inventors: Lorin Evan Ullmann, Austin, TX (US); Rajeeta Lalji Shah, Austin, TX (US)

(73) Assignee: International Business Machines Corporation, Armonk, NY (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 750 days.

(21) Appl. No.: 09/891,584

(22) Filed: Jun. 26, 2001

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(51) Int. Cl.
G06F 15/173 (2006.01)

(52) U.S. CL. 709/224; 710/18

(58) Field of Classification Search 709/224, 709/204, 223; 714/48, 45; 719/318; 707/10, 707/200; 710/8; 377/26

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,718,025 A	1/1988	Minor et al.	364/550
4,817,118 A	3/1989	Wilburn et al.	377/26
5,504,921 A	4/1996	Dev et al.	709/223
5,737,600 A	4/1998	Geiner et al.	707/200
5,857,190 A	1/1999	Brown	707/110
5,903,759 A	5/1999	Sun et al.	717/128
5,916,300 A	6/1999	Kirk et al.	701/213
5,974,573 A	10/1999	Martin	714/48

6,002,871 A	12/1999	Duggan et al.	717/135
6,430,616 B1	8/2002	Brinnand et al.	709/224
6,470,388 B1	10/2002	Niemi et al.	709/224
6,658,470 B1	12/2003	deBardelaben	709/224
6,738,832 B1	5/2004	Burr et al.	710/8
6,871,228 B1	3/2005	Shah et al.	709/224
6,879,995 B1	4/2005	Chinta et al.	709/204
2005/0028171 A1	2/2005	Kougiouris et al.	719/318
2005/0138083 A1	6/2005	Smith-Semedo et al.	707/200

OTHER PUBLICATIONS

Netzer, Robert H.B., "Adaptive Message Logging for Incremental Replay of Message-Passing Programs", ACM Press New York, USA, Year of Publication: 1993.*

* cited by examiner

Primary Examiner—John Follansbee

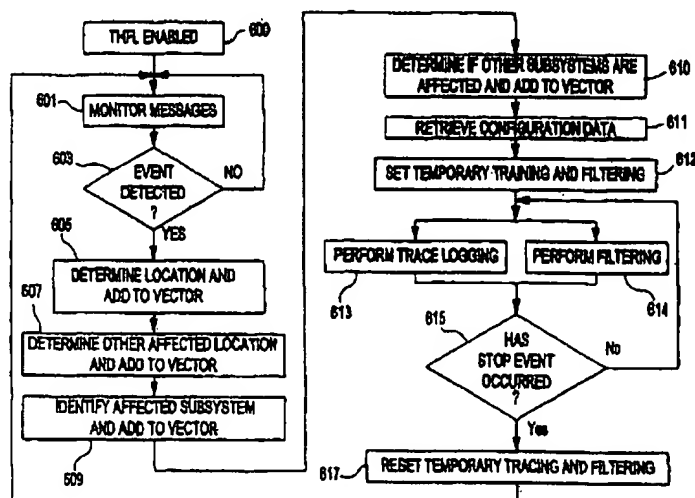
Assistant Examiner—Dustin Nguyen

(74) Attorney, Agent, or Firm—Jeffrey S. LaBaw; Anne Vachon Dougherty

(57) **ABSTRACT**

A system and method for implementing tracking of computing system activities wherein the tracking can be dynamically adjusted. The system provides a multiple level logging system having a first level for detecting message level errors and a second trace level for obtaining trace information and for filtering same to provide more details to be used for implementing corrective action. A set of filters is provided to further refine the data which is provided to a user/system administrator. The system also provides for selective activation of tracking and logging for selected subsystems, as well as the ability to vary the frequency at which the tracking is performed. The frequency of logging can be adjusted upward in response to detection of an error and can then be decreased, or the tracking selectively disabled or entirely stopped upon detection of a stop event.

22 Claims, 9 Drawing Sheets



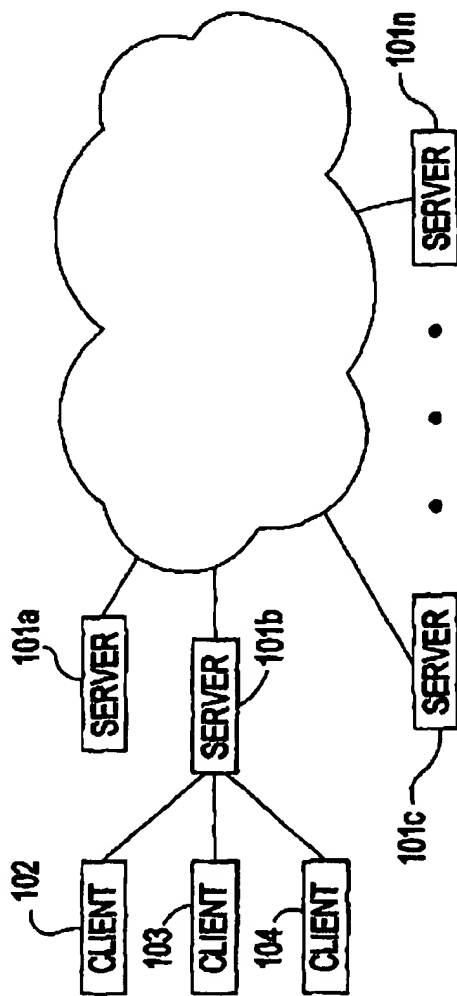


FIG. 1

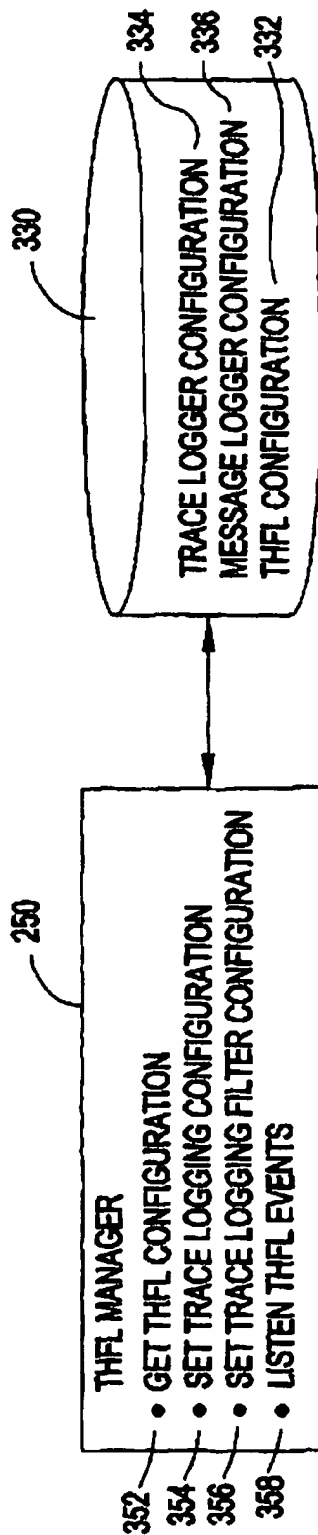


FIG. 3

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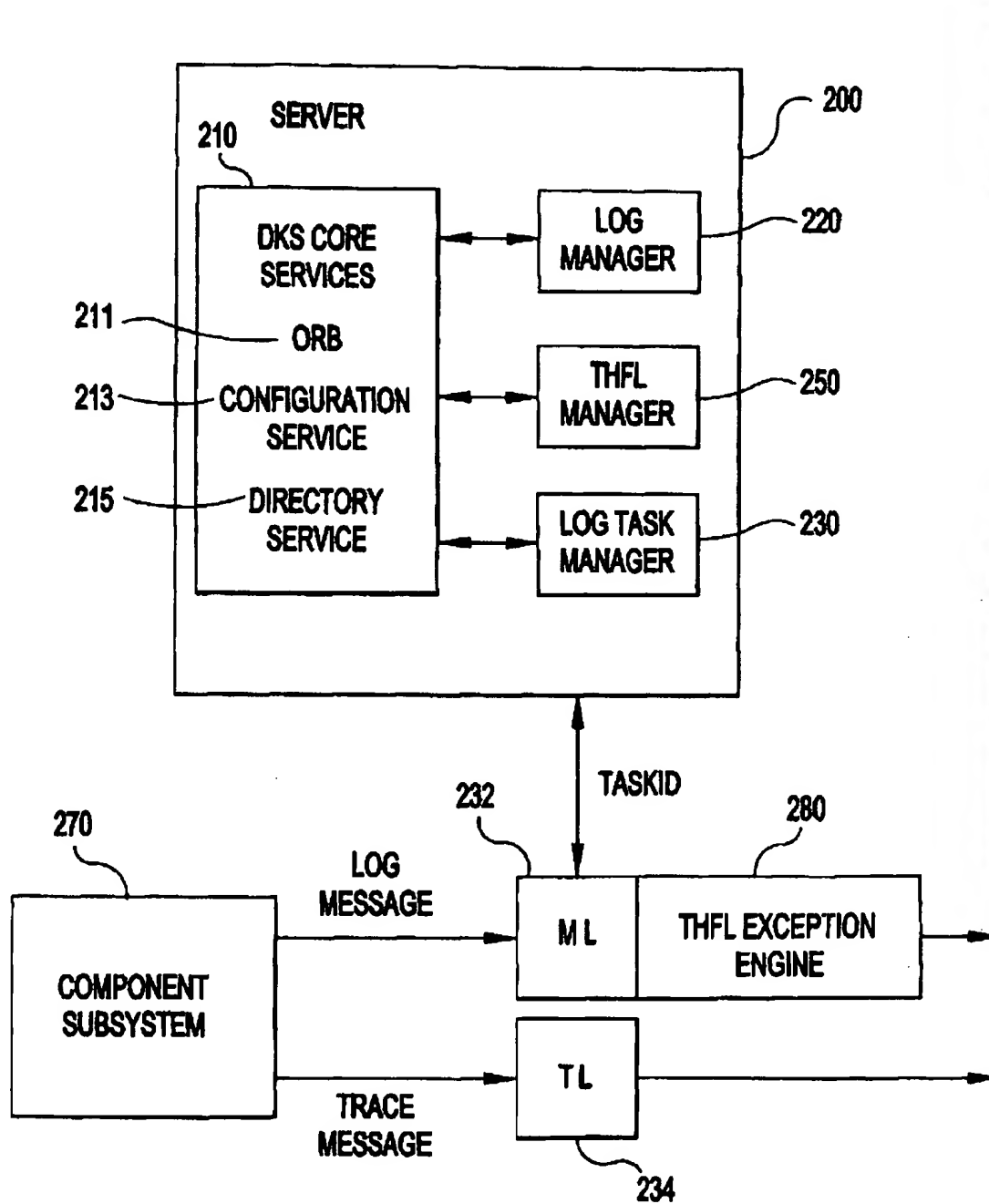


FIG.2A

FIG.2

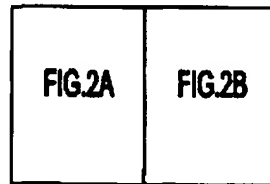
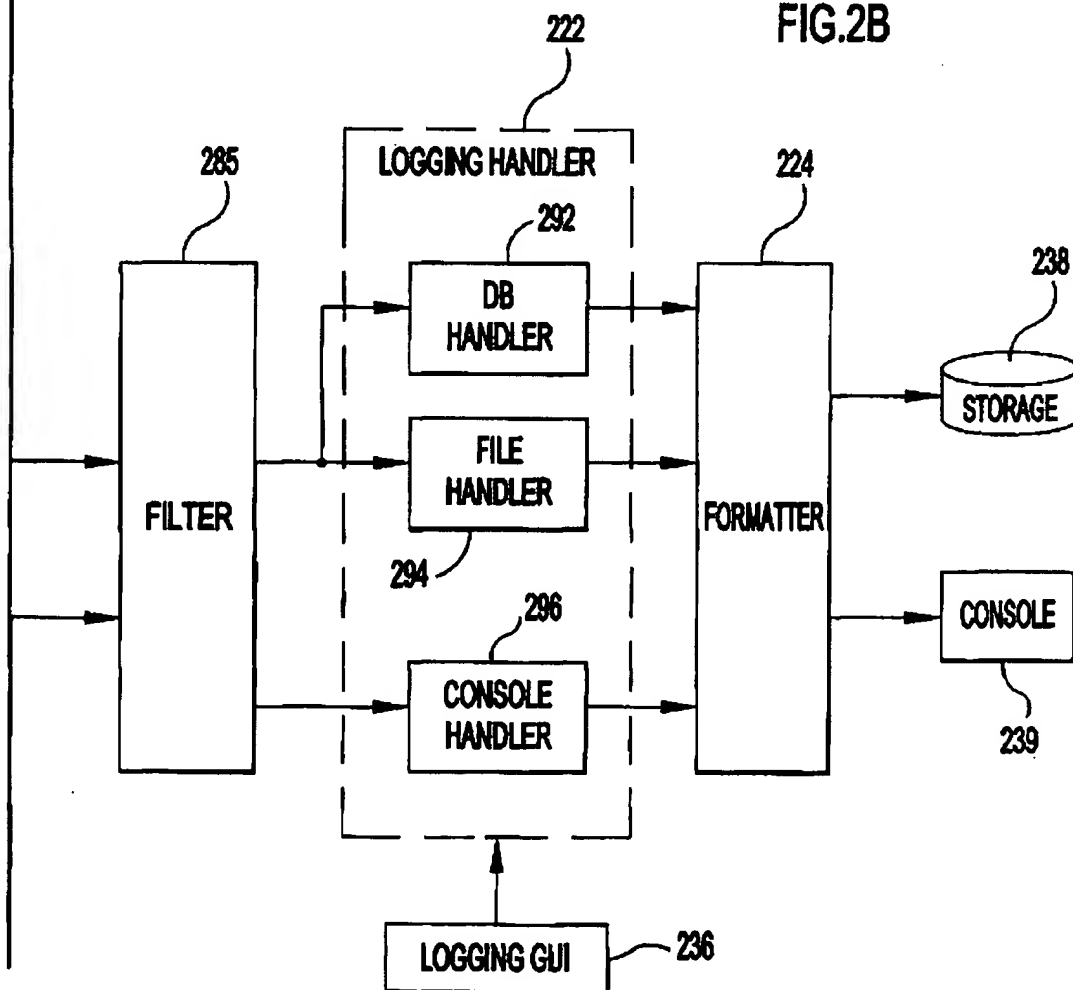


FIG.2B



✓ Transient High Frequency Logging Configuration GUI

When to Enable Transient High Frequency Logging:

☒ Run Periodic Detection

- Daily time of day = _____
- Monthly day of month = _____
- Continuous Polling interval every _____ minutes

☒ Enable immediately as response to ALL Error Message (very expensive from a performance standpoint)

☒ Select Subsystem(s) which error events turn on temporary tracing

Subsystem DropDown: Directory
 IP Driver
 ORB
 Etc.

Duration of Transient High Frequency Logging:

- ☒ (default) 1 hour after error message
- ☒ Indefinite until Administrator turns off tracing

FIG.4

FIG.5A

View Subsystems Performing Transient High Frequency Trace Logging

Current List

Drop down List of Subsystems

Directory

IP Driver

ServiceManager

ORB

List in Last ____ hours

Drop down List of Subsystems

List in Last ____ days

Drop down List of Subsystems

FIG.5B

Details Views ForEachSubsystem

View ErrorMessage that Initiated Increase Logging frequency:

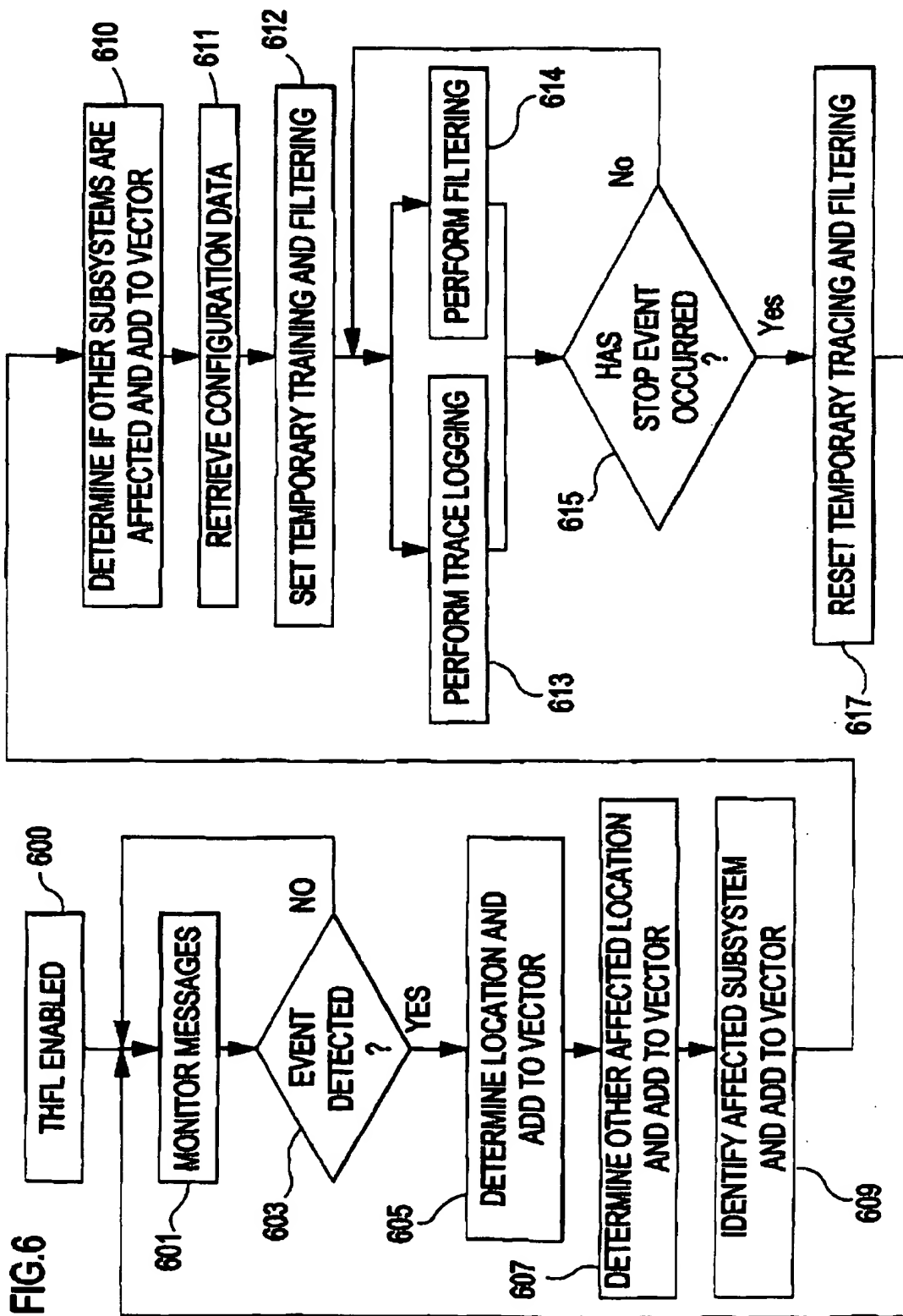
2001.05.16 07:17:41.139 FNGDR3012E The Messaging Service for the directory running on the local ORB was unable to subscribe to event messages. No directory events can be processed by the ORB.

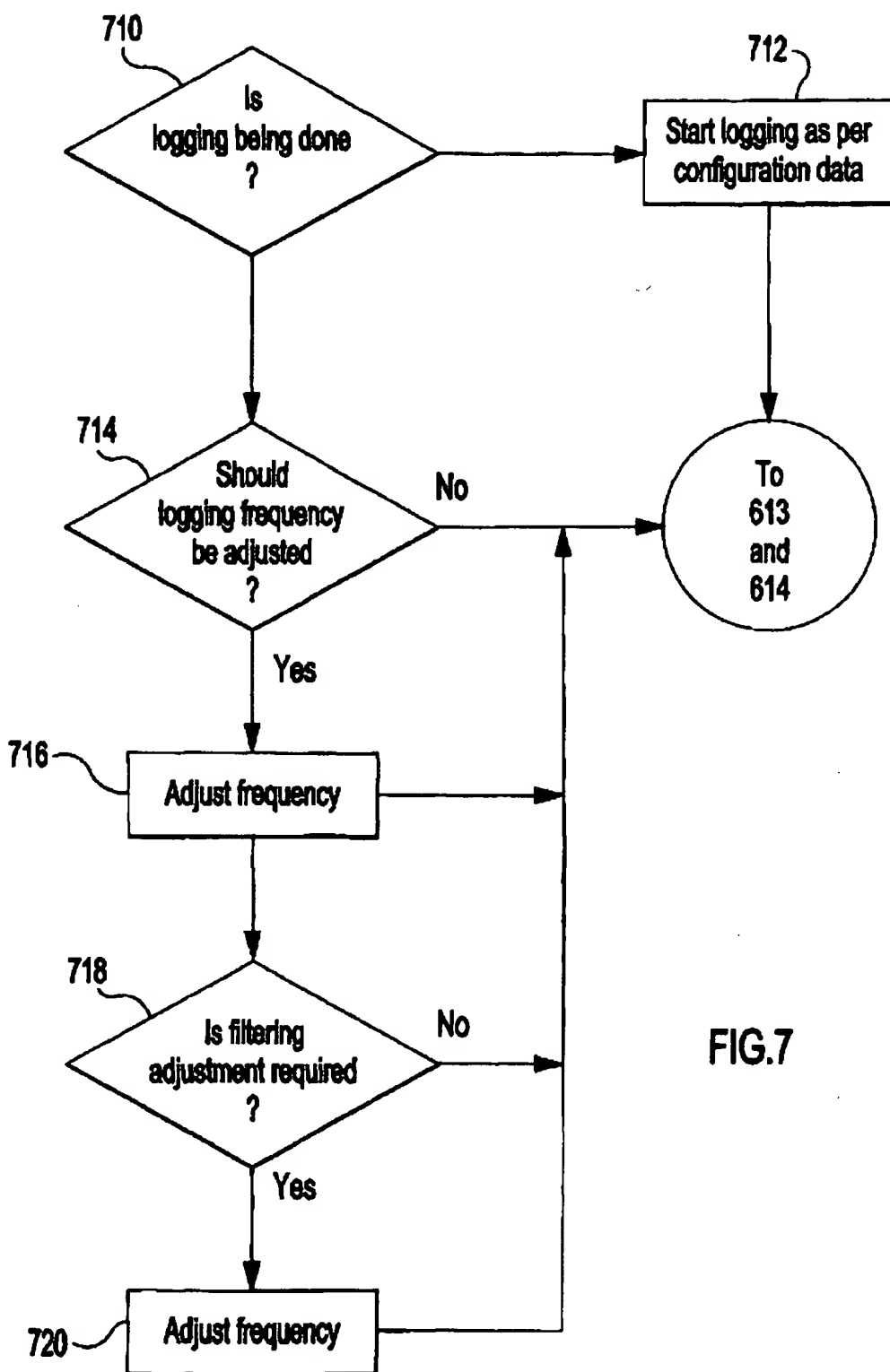
High Frequency Logging Interval 2001.05.16 07:17:41.139 - 2001.05.16 07:17:41.139

View MessageLog Button

View TraceLog Button

View CombinedTimeBoundLog Button





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